

CLAIMS

1. An apparatus for conditioning a polishing pad used in chemical mechanical planarization of semiconductor wafers, the polishing pad travels in a forward direction, wherein the polishing pad has a first point traveling at a first velocity and a second point traveling at a second velocity, the apparatus comprising:

a non-rotatable conditioning member configured to engage the polishing pad,

wherein the conditioning member includes a primary edge opposed to a secondary edge,

wherein the first point defines a first path across the conditioning member from the primary edge to the secondary edge as the first point travels in the forward direction, the first path having a first length,

wherein the second point defines a second path across the conditioning member from the primary edge to the secondary edge as the second point travels in the forward direction, the second path having a second length,

wherein the second path does not intersect with the first path, and

wherein the value of the first velocity multiplied by the first length is substantially equal to the value of the second velocity multiplied by the second length.

2. The apparatus of claim 1, wherein the conditioning member comprises a contact surface configured to engage the polishing pad between the primary edge and the secondary edge.

3. The apparatus of claim 1, wherein the primary edge and the secondary edge form straight lines.

4. The apparatus of claim 1, wherein the primary edge and the secondary edge form curved lines.

5. The apparatus of claim 4, wherein the curved lines are concave.

6. The apparatus of claim 4, wherein the curved lines are convex.

7. The apparatus of claim 1, wherein the polishing pad comprises a fixed-abrasive polishing pad.

8. An apparatus for conditioning a polishing pad used in chemical mechanical planarization of semiconductor wafers, the polishing pad mounted onto a linear belt traveling in a forward direction, the apparatus comprising:
a non-rotatable conditioning member configured to engage the polishing pad, the conditioning member including a primary edge opposed to a secondary edge, wherein the primary edge and the secondary edge are both in contact with the polishing pad, and wherein the primary edge is generally parallel to the secondary edge.

9. The apparatus of claim 8, wherein the conditioning member comprises a contact surface configured to engage the polishing pad between the primary edge and the secondary edge.

10. The apparatus of claim 8, wherein the primary edge and the secondary edge form straight lines.

11. The apparatus of claim 8, wherein the primary edge and the secondary edge form curved lines.

12. The apparatus of claim 8, wherein the polishing pad has a width, and wherein the conditioning member has a width that is equal to or greater than the width of the polishing pad.

13. The apparatus of claim 8, wherein the polishing pad comprises a wet-abrasive polishing pad.

14. The apparatus of claim 8, wherein the polishing pad comprises a fixed-abrasive polishing pad.

15. An apparatus for conditioning a polishing pad used in chemical mechanical planarization of semiconductor wafers, the polishing pad mounted onto a radial belt traveling in a forward direction, the radial belt defining a center, the apparatus comprising:

a non-rotatable conditioning member configured to engage the polishing pad, the conditioning member mounted radially along the radial belt, the conditioning member including a primary edge opposed to a secondary edge, wherein the distance between the primary edge and the secondary edge decreases as the distance from the center of the radial belt increases.

16. The apparatus of claim 15, wherein the conditioning member comprises a contact surface configured to engage the polishing pad between the primary edge and the secondary edge.

17. The apparatus of claim 15, wherein the primary edge and the secondary edge form straight lines.

18. The apparatus of claim 15, wherein the primary edge and the secondary edge form curved lines.

19. The apparatus of claim 15, wherein the polishing pad has a radius, and wherein the conditioning member has a length that is equal to or greater than the radius of the polishing pad.

5 20. A method for conditioning a polishing pad used in chemical mechanical planarization of semiconductor wafers, the method comprising:
providing a non-rotatable conditioning member configured to engage the polishing pad, the conditioning member including a primary edge opposed to a secondary edge, wherein the primary edge and the secondary edge are both in contact with the polishing pad, and wherein the primary edge is
10 generally parallel to the secondary edge;
moving the polishing pad in a forward direction; and
pressing the conditioning member against the polishing pad.

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